



Washington State Death Data 2021  
DATA USERS' GUIDE

Washington State Department of Health  
Center for Health Statistics

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Washington State Department of Health, Center for Health Statistics is responsible for the collection, data quality assurance, and dissemination of preliminary and final vital statistics data in Washington State. Center for Health Statistics is the only entity with authority to release vital statistics data files.

**Please do not share these data files with other agencies or members of the public.**

**Important Note:**

**A new vital records law <https://app.leg.wa.gov/RCW/default.aspx?cite=70.58A&full=true> and rules found here <https://www.doh.wa.gov/Portals/1/Documents/5300/WSR%2021-06-041.pdf> are in effect that changed the requirements for requesting vital records data. The new law authorizes the release of death data by signing a data sharing agreement (DSA).**

All data customers who wish to purchase any WA Death datasets will need to have a DSA in place with the Department of Health (DOH) before they are able to purchase death data. For more information please visit our website <https://www.doh.wa.gov/DataandStatisticalReports/HealthStatistics/Death>, Data Request FAQ <https://www.doh.wa.gov/DataandStatisticalReports/HealthStatistics/datarequestFAQ#heading60094>, or email [chs.datarequests@doh.wa.gov](mailto:chs.datarequests@doh.wa.gov).

The purpose of the current document is to provide death data users with an overview of the following topics:

- The collection and processing of death data in Washington State,
- The impact on data analysis of our transition to our new data management system (WHALES),
- Known data quality issues that we are in the process of addressing,
- Notes on how key variables in the data set are derived.

**For people with disabilities, this document is available on request in other formats. To submit a request, please call 1-800-525-0127 (TDD/TTY call 711).**

**This technical document is also available as a web-based (html) document <https://www.doh.wa.gov/DataandStatisticalReports/HealthStatistics/Death>.**

# OVERVIEW OF 2021 DEATHS

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In 2021, there were 70,455 deaths including both those that occurred in Washington State (regardless of decedents' state of residence) and Washington State residents who died out of state. The distribution of deaths is as follows:

- 68,754 deaths among Washington residents:
  - 67,031 WA resident deaths occurred in state
  - 1,723 WA resident deaths occurred out of state
- 1,701 deaths among out of state residents occurred in Washington State

## **Table 1. Numbers of deaths by residence and state of occurrence**

\*Includes WA residents who died in state and out of state. \*\*Includes all deaths occurring in state and deaths to Washington residents occurring outside Washington state.

As required by our agreement with NCHS the death data files do not include information on where death occurred for Washington State residents who died out of state. However, we do include deaths occurring in Washington State among out of state residents.

Year	WA residents who died in state	WA residents who died out of state	Total WA resident deaths*	Non-WA residents who died in state	Total of all deaths**
2016	53471	1287	54758	1338	56105
2017	55641	1371	57012	1338	58350
2018	55584	1329	56913	1360	58279
2019	56861	1436	58297	1378	59697
2020	61738	1439	63177	1292	64469
2021	67031	1723	68754	1701	70455

# DATA COLLECTION AND PROCESSING

## OVERVIEW

Typically, when a person dies of natural causes, the death registration process begins when a family member, friend, or staff person at a healthcare or long term care facility informs a funeral home of the death. The funeral home collects the information listed in the next tab. The funeral home communicates this information to the decedent's health care provider through the Washington Electronic Death Registration System (EDRS). The health care provider, medical examiner, or coroner uses information in the decedent's medical record and death scene investigation reports (if applicable) to submit the information requested on the medical portion or Part II of the death certificate (third tab in this section) including the cause of death.

According to Washington State law (RCW 70.58.160) deaths must be registered within 3 business days after the occurrence of death is known.

The EDRS web-based portal funnels death registration data into our data management system known as Washington Health And Life Events System (WHALES). CHS began using WHALES in 2017 after retiring the legacy system known as Bedrock. Beginning with 2016 death data we produce death data files for analysis from WHALES. The front end data collection interface for certifiers of deaths will continue to be EDRS, however, at the back end, vital records data including death data are now being extracted from WHALES. Note to DOH and local health jurisdiction users: this change in data systems does not affect CHAT users.

Once the death is registered, the information is forwarded by DOH Center for

Health Statistics (CHS) to the National Center for Health Statistics (NCHS) for coding including the text fields capturing the cause of death (see Figure 2). NCHS returns the coded information (ICD 10 codes) to CHS within a few days after we send them the text/literals.

CHS performs routine data quality checks on an ongoing basis, especially after the close of a given calendar year as we approach the deadline for submitting the annual file NCHS and to data users.



# DEMOGRAPHIC FIELDS

Figure 1. Death certificate fields - Part 1

**Washington State Death Worksheet**  
**Electronic Death Registration System (EDRS)**

**\*Required Information**

<b>*First Name</b>		Middle Name	<b>*Last Name</b>		Suffix
<b>*Gender</b> <input type="checkbox"/> Male <input type="checkbox"/> Female <input type="checkbox"/> Unknown	<b>*County of Death</b>		<b>*Date of Death</b> How Determined <input type="checkbox"/> Actual <input type="checkbox"/> Found	<b>Time of Death</b> How Determined <input type="checkbox"/> Actual <input type="checkbox"/> Found	
<b>*Date of Birth</b> (MM/DD/YYYY) <input type="checkbox"/> Unknown		<b>*Reported Age</b> <input type="checkbox"/> Unknown <input type="radio"/> 1 Year or more _____ Years <input type="radio"/> Less than 1 Year _____ Months _____ Days _____ Hours _____ Minutes			
<b>*Social Security Number</b> <input type="radio"/> Reason Not Available <input type="checkbox"/> None <input type="checkbox"/> Unknown <input type="checkbox"/> Not Obtainable		<b>Any Aliases?</b>		First Name	Middle Name
				Last Name	Suffix
<b>*Hispanic Ethnicity</b> <input type="checkbox"/> Unknown <input type="radio"/> Sought, but Unknown, <input type="radio"/> Refused, <input type="radio"/> Not obtainable <input type="checkbox"/> No Response <input type="checkbox"/> No, Not Spanish/Hispanic/Latino <input type="checkbox"/> Yes (Choose all that apply) <input type="checkbox"/> Mexican, Mexican American, Chicano <input type="checkbox"/> Puerto Rican <input type="checkbox"/> Cuban <input type="checkbox"/> Other Spanish/Hispanic/Latino		<b>*Race</b> <input type="checkbox"/> Unknown <input type="radio"/> Sought, but Unknown, <input type="radio"/> Refused, <input type="radio"/> Not obtainable <i>(Choose all that apply)</i> <input type="checkbox"/> White <input type="checkbox"/> Black or African American <input type="checkbox"/> American Indian/Alaskan Native <input type="checkbox"/> Asian Indian <input type="checkbox"/> Chinese <input type="checkbox"/> Filipino <input type="checkbox"/> Japanese <input type="checkbox"/> Korean <input type="checkbox"/> Vietnamese <input type="checkbox"/> Other Asian <input type="checkbox"/> Native Hawaiian <input type="checkbox"/> Guamanian or Chamorro <input type="checkbox"/> Samoan <input type="checkbox"/> Other Pacific Islander <input type="checkbox"/> Other			
<b>*Place of Birth</b> <input type="checkbox"/> Birth Place Unknown	Country	State	County	City	
<b>*Place of Residence</b>	Country	Street	Unit	City	State Zip County
<b>*Estimate Length of Time at Residence</b> <input type="radio"/> 1 Year or more _____ Years <input type="radio"/> Less than 1 Year _____ Months _____ Days _____ <input type="radio"/> Unknown		<b>*Inside City Limits?</b> <input type="radio"/> No Response <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Unknown		<b>Reside on Tribal Reservation?</b> <input type="radio"/> No Response <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Unknown	
<b>*Education</b> <input type="checkbox"/> 8 <sup>th</sup> grade or less (Specify) _____ <input type="checkbox"/> 9 <sup>th</sup> -12 <sup>th</sup> grade; no diploma <input type="checkbox"/> High school graduate or GED completed <input type="checkbox"/> Some college credit, but no degree <input type="checkbox"/> Associate degree (e.g., AA, AS) <input type="checkbox"/> Bachelor's degree (e.g., BA, AB, BS) <input type="checkbox"/> Master's degree (e.g., MA, MS, MEng, MEd, MSW, MBA) <input type="checkbox"/> Doctorate (e.g., PhD, EdD or Professional degree (e.g., MD, DDS, DVM, LLB, JD))		<b>*Usual Occupation</b> (DO NOT enter RETIRED)  <b>*Business/Industry</b> (DO NOT use COMPANY NAME)			
<b>*Was Decedent ever in U.S. Armed Forces?</b> <input type="radio"/> No Response <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Unknown		<b>*Marital Status at Time of Death</b> <input type="checkbox"/> Never Married <input type="checkbox"/> Divorced <input type="checkbox"/> Unknown <input type="checkbox"/> Married <input type="checkbox"/> Widowed <input type="checkbox"/> Domestic Partner <input type="checkbox"/> Separated Surviving Spouse or Domestic Partner Name (give name prior to first marriage)			
<b>*Parent's Names</b> Father's First Name		Middle Name	Last Name		Suffix
Mother's First Name		Middle Name	Last Name (prior to first marriage)		
<b>*Informant's Name</b>		Relationship to Decedent		Address (Street, City, State, Zip, [Country if not United State])	
<b>*Where did death occur?</b> <input type="radio"/> No Response <input type="radio"/> Hospital Location in Hospital <input type="checkbox"/> Inpatient <input type="checkbox"/> Emergency Room/Outpatient <input type="checkbox"/> Dead on Arrival		<input type="radio"/> Other Facility Name or Location <input type="checkbox"/> Hospice Facility <input type="checkbox"/> Nursing Home/Long Term Care Facility <input type="checkbox"/> Decedent Home <input type="checkbox"/> Other (Specify) City Zip			
Funeral Home Handling Case					<b>Was ME/Coroner Informed?</b> <input type="radio"/> Yes <input type="radio"/> No
<b>*Disposition</b> <input type="checkbox"/> Burial <input type="checkbox"/> Cremation <input type="checkbox"/> Removal from State <input type="checkbox"/> Donation <input type="checkbox"/> Entombment <input type="checkbox"/> Body not Recovered <input type="checkbox"/> Other (Specify)		<b>Date of Disposition</b> <input type="checkbox"/> Unknown Month Day Year (YYYY)		<b>Place of Final Disposition</b> (Name of cemetery, crematory, other place)	
Country		State	City		

DOH/CHS 406 3/10/11

# MEDICAL FIELDS

Figure 2. Death certificate fields - Part 2

Part 2: Completed by Medical Certifier			
<b>Manner of Death</b> <input type="checkbox"/> Natural <input type="checkbox"/> Accident <input type="checkbox"/> Suicide <input type="checkbox"/> Homicide <input type="checkbox"/> Undetermined <input type="checkbox"/> Pending		<b>Time of Death (24 hours)</b> _____ <b>How Determined</b> <input type="checkbox"/> Actual <input type="checkbox"/> Presumed/Estimated <input type="checkbox"/> Court Appointed <input type="checkbox"/> Found	
<b>Did tobacco use contribute to death?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Probably <input type="checkbox"/> Unknown		<b>Autopsy?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown <b>Were autopsy findings available to complete the cause of death?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	
<b>If female:</b> <input type="checkbox"/> Not pregnant <input type="checkbox"/> Pregnant at time of death <input type="checkbox"/> Not pregnant, but pregnant within 42 days before death <input type="checkbox"/> Not pregnant, but pregnant 43 days to 1 year before death <input type="checkbox"/> Unknown if pregnant within the past year			
Cause of Death			
Enter the chain of events – diseases, injuries, or complications – that directly caused the death. DO NOT enter terminal events such as cardiac arrest, respiratory arrest, or ventricular fibrillation without showing etiology. DO NOT ABBREVIATE. Add additional lines if necessary.			
<b>IMMEDIATE CAUSE (Final disease or condition resulting in death)</b> A. _____		Interval between Onset & Death	
B. _____		Interval between Onset & Death	
<b>Sequentially list conditions, if any, leading to the cause listed on line A. Enter the UNDERLYING CAUSE (disease or injury that initiated the events resulting in death) LAST.</b> C. _____		Interval between Onset & Death	
D. _____		Interval between Onset & Death	
Other significant conditions contributing to death but not resulting in the underlying cause given above.			
<b>Date of Injury (mm/dd/yyyy)</b> _____ <b>Time of Injury (24 hours)</b> _____		<b>How Determined:</b> Actual <input type="checkbox"/> Presumed/Est <input type="checkbox"/> Court Appointed <input type="checkbox"/> Found <input type="checkbox"/> <b>Place of injury</b> _____	
<b>Location of Injury: Number &amp; Street</b> _____		<b>Apt No</b> _____ <b>City/Town</b> _____ <b>State</b> _____ <b>Zip+4</b> _____ <b>County</b> _____	
<b>Describe how injury occurred.</b> _____		<b>Injury at Work?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	
		<b>If transportation injury</b> <input type="checkbox"/> Driver/Operator <input type="checkbox"/> Pedestrian <input type="checkbox"/> Passenger <input type="checkbox"/> Other _____	
<b>Certifying Physician</b> To the best of my knowledge, death occurred at the time, date, and place and due to the cause(s) and manner stated. X		<b>Medical Examiner/Coroner</b> On the basis of examination, and/or investigation, in my opinion, death occurred at the time, date, and place, and due to the cause(s) and manner stated. X	
<b>Name and Address of Certifier – Physician, Medical Examiner or Coroner (Type or Print)</b> _____			<b>Date Signed</b> _____
<b>Name and Title of Attending Physician if other than Certifier (Type or Print)</b> _____			
<b>Title of Certifier</b> _____	<b>License Number</b> _____	<b>ME/Coroner File Number</b> _____	<b>Was case referred to the ME/Coroner?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No

## **EFFECT OF TRANSITION TO WHALES**

We have listed the main impacts of our transition in 2016 from our legacy system to the current Washington Health And Life Events System (WHALES).

### **Change in variable names**

The most significant impact for data users using statistical software (SAS, Stata, etc.) to analyze death data for 2016 onward is that variable names for most data fields have changed starting with the 2016 death file. As the new variable names will not match those in death files for 2015 or older data any programs written to conduct analysis with pre-2016 data files will not work with files produced for 2016 and later. For example, the variable “cnty\_res” in the pre-2016 format appears as “Residence County WA Code” in the new (2016 and later) format.

To assist with the transition we have created two resources to help data users. The first is a cross walk that displays old variable names and values and the corresponding new variable names and values. The second tool is a Stata do file that converts new (WHALES) variable names to the old ones. The do file (named “DthStatFile\_ConvertToOldVarNames.do”) is available to data users with the death data set on our Secure Access Washington CHS Data Files site. The Death Statistical Data Dictionary and Crosswalks ([hyperlink](#)) includes both current and historical field names, formats and labels.

### **Names of funeral homes and disposition facilities**

In death files for 2017 and later, the variables for funeral home and disposition facilities will appear as literals and codes for both funeral homes and disposition facilities.

### **Variables no longer in data set**

The following variables will not be present in the death data sets beginning with the 2016 data. Some of these variables have not been in use for several years but remained in previous annual releases of death data as place holders

to preserve the layout of the data sets. Other variables appear as literal fields in 2016 and later death files compared with codes in pre-2016 files.

**Table 2. Variables dropped from death data beginning with 2016 data files**

Old Variable Name	Description	Notes
citizen	Citizenship status	Discontinued in 1992.
contrib	Contributory cause of death	Discontinued in 1989.
emergent	Emergency care code indicating whether emergency care was given.	Discontinued in 1988.
funeralc	Funeral home code	Use funeralc for pre-2016 death files. Use “Funeral_Home_Name” for deaths in 2016 and later. This is a field with the literal name of the funeral home rather than codes.
hs_grad	High school graduation status	Discontinued in 1992. Use “educ” (for pre-2016) and “Education” (for 2016 and later)
ind_fed	Federal industry code	Discontinued in 2010.
injplace	Place external injury occurred	Discontinued since 2012. Use “injpnchs” (pre-2016) or “Injury_ACME_Place” (for 2016 and later.)
nchsnew	NCHS new record flag indicating records added since annual cutoff date.	Discontinued in 2000.
occ_fed	Federal occupation code	Discontinued in 2010.
resunit	Length of residence unit type	Discontinued in 2004 and replaced with res_lena (pre-2016 files). Use “Residence_Length_Units” for deaths in 2016 and later.

*(continued)*

Old Variable Name	Description	Notes
resunum	Length of residence, number of units	Discontinued in 2004 – replaced by res_auni (pre-2016) and “Residence_Length” (for deaths in 2016 and later.)
smoking	Smoking status in 15 years prior to death	Discontinued in 2004. Use “tbcontri” (pre-2016) and “Tobacco” (for 2016 deaths and later.)
transax	TRANSAX conversion flag indicating alternation of literal codes	Discontinued in 1999
occupation milham	Usual Occupation - Milham’s Code	Discontinued in 2019
res tribal reservation code	Decedent’s Residence Tribal Reservation Code	Discontinued in 2020

# RELEASE OF DEATH DATA FILES

This section provides information on the various standard death files we release along with details of the data format and general release schedule.

## Differences in file types

CHS releases different versions of the death data including Death Statistical, Cause of Death Literals, Geocode, and Names Files. The data files cover the same period but differ in the variables and decedent population they include.

The table below indicates with an 'X' the variables that are present in each death file.

**Table 3. Death files compared**

Field Name	Statistical	Cause of Death Literals	Names	Geocode
State File Number	X	X	X	X
Social Security Number			X	
Decedent Last Name			X	
Decedent First Name			X	
Decedent Middle Name			X	
Decedent Suffix			X	
Sex	X		X	

(continued)

Field Name	Statistical	Cause of Death Literals	Names	Geocode
Age Type	X		X	
Age	X		X	
Age Years	X			
Date of Birth	X		X	
Date of Birth - Month	X		X	
Date of Birth - Day	X		X	
Date of Birth - Year	X		X	
Date of Death	X		X	
Date of Death - Month	X		X	
Date of Death - Day	X		X	
Date of Death - Year	X		X	
Date of Death Modifier	X			
Time of Death - Hour	X			
Time of Death - Minutes	X			
Time of Death Modifier	X			
Birthplace State FIPS Code	X			
Birthplace Country	X			
Death City	X			
Death County	X		X	
Death County City WA Code	X			
Death County WA Code	X			
Death State	X			
Death Zip Code	X			
Place of Death Type	X			
Death Facility	X			
Armed Forces	X			
Marital Status	X			
Education	X			
Education 8 or Less	X			
Occupation	X			

*(continued)*

Field Name	Statistical	Cause of Death Literals	Names	Geocode
Industry	X			
Informant Relationship	X			
Race White	X			
Race Black	X			
Race Amer Indian Alaskan	X			
Race Asian Indian	X			
Race Chinese	X			
Race Filipino	X			
Race Japanese	X			
Race Korean	X			
Race Vietnamese	X			
Race Other Asian	X			
Race Hawaiian	X			
Race Guamanian or Chamorro	X			
Race Samoan	X			
Race Other Pacific Islander	X			
Race Other	X			
Race Tribe First	X			
Race Tribe Second	X			
Race Other Asian First	X			
Race Other Asian Second	X			
Race Other PI First	X			
Race Other PI Second	X			
Race Other First	X			
Race Other Second	X			
Bridge Race	X			
Race Summary Code	X			
Race Calculation	X			
Hispanic No	X			
Hispanic Mexican	X			



(continued)

Field Name	Statistical	Cause of Death Literals	Names	Geocode
Hispanic Puerto Rican	X			
Hispanic Cuban	X			
Hispanic Other	X			
Hispanic NCHS Bridge	X			
Residence City Street			X	
Residence City	X		X	
Residence City FIPS Code	X			
Residence City Limits	X			
Residence County	X		X	
Residence County City WA Code	X			X
Residence County WA Code	X			X
Residence County FIPS Code	X			
Residence State			X	
Residence State FIPS Code	X			
Residence Zip Code	X		X	X
Res Geo Source				X
Res Geo Match Score				X
Residence Latitude				X
Residence Longitude				X
Res Geo School District				X
Res Geo Census Tract 2000				X
Res Geo Census Block Grp 2000				X
Res Geo Census Block 2000				X
Res Geo ZCTA 2000				X
Res Geo Census Tract 2010				X
Res Geo Census Block Grp 2010				X
Res Geo Census Block 2010				X
Res Geo ZCTA 2010				X
Res Tribal Reservation Code	X			
Residence Length Units	X			

*(continued)*

Field Name	Statistical	Cause of Death Literals	Names	Geocode
Residence Length	X			
Funeral Home Name	X			
Disposition	X			
Disposition Date	X			
Disposition Date - Month	X			
Disposition Date - Day	X			
Disposition Date - Year	X			
Disposition Place Name	X			
Certifier Designation	X			
ME Coroner Referred	X			
Cause of Death Line A		X		
Cause of Death Line B		X		
Cause of Death Line C		X		
Cause of Death Line D		X		
Interval Line A		X		
Interval Line B		X		
Interval Line C		X		
Interval Line D		X		
Conditions Part II		X		
ACME Line 1	X			
ACME Line 2	X			
ACME Line 3	X			
ACME Line 4	X			
ACME Line 5	X			
ACME Line 6	X			
ACME Line 7	X			
ACME Line 8	X			
ACME Line 9	X			
ACME Line 10	X			
ACME Line 11	X			

*(continued)*

Field Name	Statistical	Cause of Death Literals	Names	Geocode
ACME Line 12	X			
ACME Line 13	X			
ACME Line 14	X			
ACME Line 15	X			
ACME Line 16	X			
ACME Line 17	X			
ACME Line 18	X			
ACME Line 19	X			
ACME Line 20	X			
ACME Sequence 1	X			
ACME Sequence 2	X			
ACME Sequence 3	X			
ACME Sequence 4	X			
ACME Sequence 5	X			
ACME Sequence 6	X			
ACME Sequence 7	X			
ACME Sequence 8	X			
ACME Sequence 9	X			
ACME Sequence 10	X			
ACME Sequence 11	X			
ACME Sequence 12	X			
ACME Sequence 13	X			
ACME Sequence 14	X			
ACME Sequence 15	X			
ACME Sequence 16	X			
ACME Sequence 17	X			
ACME Sequence 18	X			
ACME Sequence 19	X			
ACME Sequence 20	X			
ACME Cause Category 1	X			

*(continued)*

Field Name	Statistical	Cause of Death Literals	Names	Geocode
ACME Cause Category 2	X			
ACME Cause Category 3	X			
ACME Cause Category 4	X			
ACME Cause Category 5	X			
ACME Cause Category 6	X			
ACME Cause Category 7	X			
ACME Cause Category 8	X			
ACME Cause Category 9	X			
ACME Cause Category 10	X			
ACME Cause Category 11	X			
ACME Cause Category 12	X			
ACME Cause Category 13	X			
ACME Cause Category 14	X			
ACME Cause Category 15	X			
ACME Cause Category 16	X			
ACME Cause Category 17	X			
ACME Cause Category 18	X			
ACME Cause Category 19	X			
ACME Cause Category 20	X			
ACME Nature of Injury Flag 1	X			
ACME Nature of Injury Flag 2	X			
ACME Nature of Injury Flag 3	X			
ACME Nature of Injury Flag 4	X			
ACME Nature of Injury Flag 5	X			
ACME Nature of Injury Flag 6	X			
ACME Nature of Injury Flag 7	X			
ACME Nature of Injury Flag 8	X			
ACME Nature of Injury Flag 9	X			
ACME Nature of Injury Flag 10	X			
ACME Nature of Injury Flag 11	X			

*(continued)*

Field Name	Statistical	Cause of Death Literals	Names	Geocode
ACME Nature of Injury Flag 12	X			
ACME Nature of Injury Flag 13	X			
ACME Nature of Injury Flag 14	X			
ACME Nature of Injury Flag 15	X			
ACME Nature of Injury Flag 16	X			
ACME Nature of Injury Flag 17	X			
ACME Nature of Injury Flag 18	X			
ACME Nature of Injury Flag 19	X			
ACME Nature of Injury Flag 20	X			
Underlying COD Code	X		X	
Record Axis Code 1	X			
Record Axis Code 2	X			
Record Axis Code 3	X			
Record Axis Code 4	X			
Record Axis Code 5	X			
Record Axis Code 6	X			
Record Axis Code 7	X			
Record Axis Code 8	X			
Record Axis Code 9	X			
Record Axis Code 10	X			
Record Axis Code 11	X			
Record Axis Code 12	X			
Record Axis Code 13	X			
Record Axis Code 14	X			
Record Axis Code 15	X			
Record Axis Code 16	X			
Record Axis Code 17	X			
Record Axis Code 18	X			
Record Axis Code 19	X			
Record Axis Code 20	X			

*(continued)*

Field Name	Statistical	Cause of Death Literals	Names	Geocode
Autopsy	X			
Autopsy Available	X			
Pregnancy	X			
Tobacco	X			
Manner	X			
Injury Description		X		
Date of Injury	X			
Date of Injury - Month	X			
Date of Injury - Day	X			
Date of Injury - Year	X			
Injury Date Modifier	X			
Time of Injury - Hour	X			
Time of Injury - Minutes	X			
Time of Injury Modifier	X			
Injury Place	X	X		
Injury ACME Place	X			
Injury City	X			
Injury County City WA Code	X			
Injury County WA Code	X			
Injury County	X			
Injury State	X			
Injury Zip Code	X			
Injury at Work	X			
Injury Transportation	X			
Date Received	X			
Local File Number	X			
Funeral Home Code	X			
Disposition Facility Code	X			
Drug All	X			
Opioid	X			

*(continued)*

Field Name	Statistical	Cause of Death Literals	Names	Geocode
Heroin	X			
Natural Semisynthetic Opioid	X			
Methadone	X			
Synthetic Opioid	X			
Cocaine	X			
Prescription Opioid	X			
Psychostimulant	X			
Suicide All	X			
Suicide firearm	X			
Suicide Asphyxia	X			
Suicide Poisoning	X			
Suicide Other	X			
Firearm All	X			
Firearm Unintentional	X			
Firearm Homicide	X			
Firearm Undetermined	X			
Firearm Suicide	X			
Firearm Legal	X			
Malignant Neoplasm	X			
Heart Disease	X			
Alzheimers	X			
Unintentional Injury	X			
Chronic Lower Respiratory	X			
Cerebrovascular Disease	X			
Diabetes	X			
Chronic Liver Disease	X			
Influenza Pneumonia	X			
Parkinsons	X			
Essential Hypertension	X			
Pneumonitis	X			

## Data format and release schedule

CHS will continue to release final death data files annually in comma delimited format (for Cause of Death Literals and Names files) and Microsoft Excel format (for Statistical and Geocode files). There will also be SAS and Stata versions of the Death Statistical file.

We plan to release the final data file for a given year approximately nine months after the end of the calendar year. We will place the files on the DOH Y:Drive for DOH assessment staff and will upload them to CHS Data Files (accessed via Secure Access Washington) for local health assessment staff.

The files will also be available for order to the general public at <https://www.doh.wa.gov/DataandStatisticalReports/HealthStatistics/Death>.

CHS will also release provisional death data files on a quarterly basis within two weeks of the close of the calendar quarter.

Please note that certain variables in preliminary death data sets will have missing or incomplete information as we await additional information from medical certifiers. These fields include cause of death and manner of death particularly those involving deaths that are not due to natural causes. It can take up to 3 months to obtain complete cause of death and manner of death information for suicides, homicides, and deaths of undetermined intent. The delay is due to the length of time needed to complete toxicological tests, autopsies, and to collect additional information from various sources such as law enforcement reports (if applicable) medical examiners and coroners.

We typically release final annual files around September in the year following the death year due to NCHS pausing medical coding.

**Table 4. File release schedule**

Type of file	Annual	Quarterly
Status	Final	Preliminary
Release date*	September of calendar year following death year	Last 2 weeks of the month following the calendar quarter

\*Release timeframes listed are approximate



## **Discontinuation of Opioid File**

We have discontinued the production of Washington State Opioid Death file as created for 1995-2015 deaths. We are currently evaluating the best way to produce data on this issue. We have created a number of opioid overdose death flags in the statistical death files beginning in 2017 that are consistent with definitions created by the Centers for Disease Control and Prevention (CDC). Data users can find additional information about these and other disease flags in section 8 of this guide.

# MORE ON SELECT ANALYTIC VARIABLES

In this section we list details on key analytic variables including how they are derived and recommendations for their use in analysis. We also alert data users to known data quality issues.

## **Variables with known data quality issues**

We are aware of the following data issues and we are working to address them as noted. DOH and local health jurisdiction users: please note that these issues do not affect the use of CHAT. These issues are only relevant to data users who intend to analyze death data in statistical software such as SAS or Stata. In addition to the issues listed below, we are continuing to examine other data issues and will provide updates as needed. We welcome feedback from all data users if you identify a data issue not mentioned below.

### **Pregnancy status**

In death files for 2015 and earlier, men and women outside the expected age range for pregnancy (10 to 55 years) were coded as “8” indicating that the question is “not applicable.” In the new coding schema for data files for 2016 and beyond, all men and women outside the expected age range (below 10 years and above 55 years) should be coded as blank (“.”) to indicate that the question is not applicable. Due to a data conversion problem in the 2016 death file the pregnancy variable is blank (i.e. “not applicable”) for some

women within the expected age range when they should have been coded as “8” (“no response”). CHS has made changes to WHALES to code these situations to “8” beginning with the 2017 annual data file.

Recommendation: To maintain consistency between the released 2016 death files and those issued for 2017 and later, please recode the blanks for women in the appropriate age range to “8” in 2016 in accordance with coding scheme below (for 2016 and later).

**Table 5. Change in coding scheme for pregnancy status variable**

2016 onwards			2015 and prior		
Variable name/ Format	Values	Value labels	Variable name/ Format	Values	Value labels
Pregnancy  1; Numeric	1	Not pregnant within the past year	pregstat  1; Character	0	Pregnancy status missing
	2	Pregnant at the time of death		1	Not pregnant within 1 year
	3	Not pregnant, but pregnant within 42 days of death		2	Pregnant at death
	4	Not pregnant, but pregnant 43 days to 1 year before death		3	Not pregnant, but pregnant within 42 days of death
	8	No response		4	Not pregnant, but pregnant 43 days to 1 year before death
	9	Unknown if pregnant within the past year		8	Not applicable
	Blank	Not applicable		9	Unknown

## Geography

For some records, variables showing residence or occurrence county and city codes in 2016 and beyond show values of a series of '9's. Records for Washington State residents who died in state with '9's in the county and/or city fields may indicate that the individual was homeless or transient. These records used to be coded as a series of '0's in 2015 and earlier.

Out of state residents who died in Washington State or Washington State residents who died out of state may also have city and county codes that are coded with '9's when the residence or occurrence geography is not known.

## **Non-specific causes of death**

When death certificates are registered with cause of death statements that are vague CHS staff will follow up with the health care provider on record to try to obtain further details. There are approximately 700 ICD 10 codes for non-specific causes of death that require follow up from CHS. Sometimes, this process will result in additional information being added to the cause of death statement that may change the underlying cause of death. Towards the end of 2016, as CHS prepared to switch over to WHALES, we were unable to conduct this follow up or “queries” on death certificates with non-specific causes of death. Examples of causes of death that were not queried in 2016 due to the transition include “congestive heart failure”, “systolic heart failure”, “senile dementia” (with no additional specifics), “metastatic carcinoma”, “leukemia” (malignant neoplasm without specification of site). We estimate that 8 to 10% of death records that would have received follow up and may have resulted in a change to the underlying cause of death were not queried in 2016.

## **Missing/out of range values for out of state deaths**

Information on decedents who were Washington state residents that died outside of Washington State are reported by the state of death to Washington State via the National Center for Health Statistics (NCHS). Due to restrictions imposed by an inter-jurisdictional exchange agreement NCHS can relay only specific variables in death data from other states where the death occurred. While we have near complete information for underlying and multiple cause information for out of state deaths, we do not have complete information for bridged race, summary race, Hispanic ethnicity, and armed forces participation. However, only a small percent of deaths (primarily in counties bordering Idaho or Oregon) are missing bridged race information.

## Missing/out of range values for in state deaths

We typically conduct exploratory analyses of the death data variables to identify and correct missing and out of range values. Deaths occurring within Washington State and having missing or incorrect information are generally more easily corrected compared with out of state deaths.

## Race and Ethnicity

### Data collection

Informants/funeral homes provide DOH race and Hispanic ethnicity information for the decedent using a series of check boxes in the Electronic Death Registration System (EDRS). These race and ethnicity options are consistent with the multiple options provided on the U.S. Standard Certificate of Death (2003). Informants/funeral homes may select as many race categories and as many Hispanic sub-categories as appropriate. Race and ethnicity are required fields i.e. the funeral home must select an option even if the option is ‘unknown’.

Figure X. Screenshot of race and ethnicity fields in EDRS

The screenshot displays two sections of the EDRS form. The left section is titled '\* Hispanic Ethnicity' and includes a dropdown menu for 'Unknown -- Select --'. Below this are radio buttons for 'No Response', 'No, Not Spanish/Hispanic/Latino', and 'Yes (Choose all that apply)'. Under 'Yes', there are checkboxes for 'Mexican, Mexican American, Chicano', 'Puerto Rican', 'Cuban', and 'Other Spanish/Hispanic/Latino', with a text input field below the last option. The right section is titled '\* Race' and features a dropdown menu for 'Unknown -- Select --'. Below this is the instruction '(Choose all that apply)'. It lists various race categories with checkboxes: 'White', 'Black or African American', 'American Indian/Alaskan Native', 'Asian Indian', 'Chinese', 'Filipino', 'Japanese', 'Korean', 'Vietnamese', 'Other Asian', 'Native Hawaiian', 'Guamanian or Chamorro', 'Samoan', and 'Other Pacific Islander'. There are also text input fields for 'Other' and 'Other Asian'.

- If the funeral home selects an “other” ethnicity or race option (e.g. “other Spanish/Hispanic/Latino” or “Other Asian”) they must

enter additional details in the text box (literal) immediately following the “other” checkbox selected.

- DOH manually corrects spelling errors for literals against a list of “other” race and ethnic subgroups which we update on an ongoing basis.
- All death records are forwarded to NCHS where the checkboxes and textboxes are assigned codes that are further processed to give us the individual race variables e.g. (‘Race White’, ‘Race Black’) and derived variables like ‘Bridge Race’ and ‘Race Summary Code’. The imputation procedure to derive bridge race categories is described in detail at [http://www.cdc.gov/nchs/data/dvs/Multiple\\_race\\_documentation\\_5-10-04.pdf](http://www.cdc.gov/nchs/data/dvs/Multiple_race_documentation_5-10-04.pdf)

### **Main analytic variables**

For routine analysis involving the creation of mortality rates based on census-based population estimates (e.g. those developed by Washington State Office of Financial Management) please use the following variables and values:

- ‘Hispanic No’
  - ‘N’ = decedent was Hispanic (please note double negative)
  - ‘Y’ = decedent was NOT Hispanic
- ‘Race Summary Code’ – using those who responded that they are NOT Hispanic analyze by the following single race groups:
  - American Indian or Alaska Native, single race only, non-Hispanic
  - Asian, single race only, non-Hispanic
  - Black or African American, single race only, non-Hispanic
    - \* Native Hawaiian or Other Pacific Islander, single race only, non-Hispanic
  - White, single race only, non-Hispanic

For detailed guidelines please read visit: <https://www.doh.wa.gov/Portals/1/Documents/1500/RaceEthnGuidelines.pdf>

*Rationale* Use of this variable and values allows for calculation of rates because it is consistent with Census and OFM categorization of race and ethnicity. Use of multi race groups isn't necessary given that only 1.3% of death records in Washington State indicate multiple race at this time.

*Limitations* – undercount of certain races because of how race/ethnicity is ascertained. Reporting of race/Hispanic ethnicity (origin) on death certificates is sometimes based on observing the decedent, rather than questioning the next of kin. This procedure causes an underestimate of deaths for certain groups, particularly Native Americans, some Asian subgroups, and Hispanics. Thus, death rates based on death certificate data are lower than true death rates for these groups.

### **Related variables**

#### *'Bridge Race'*

NCHS creates a bridge race variable to make multiple-race and single race data collection systems more comparable so that data users can calculate race-specific statistics. The bridging methodology developed by NCHS bridges the multiple-race group population counts to the four single-race categories specified in the old 1977 federal Office of Management and Budget (OMB) standards. In 1997, OMB revised the 1977 standards for collection of race and ethnicity data increasing the number of race categories previously used from four (White, Black, American Indian or Alaska Native (AIAN), and Asian or Pacific Islander (API)) to five (White, Black or African American, American Indian or Alaska Native, Asian, and Native Hawaiian or Other Pacific Islander). In addition, the revised standards require Federal data collection programs to allow respondents to select more than one race category when responding to a query on their racial identity. This provision means that under the revised standards there are potentially 31 race groups (5 single-race and 26 multiple-race), depending on whether an individual selects one, two, three, four, or all five of the single-race categories.

Race bridging is needed within a given data system because the change in the race standards results in incomparability across time, thus making it difficult to perform trend analyses.

WA DOH recommends using Race Summary because it allows Asians and Pacific Islanders to be reported as separate groups unlike Bridge Race.

- 'Hispanic NCHS Bridge'. A single variable which indicates both His-



panic ethnicity status and country of origin if decedent was Hispanic. Use 'Hispanic NCHS Bridge' when it is important to know the country to which the decedent had ancestral connection.

## Cause of death

### Data collection

The health care provider caring for the decedent at the time of death reports the cause of death via EDRS. Mirroring the U.S. Standard death certificate form, EDRS provides four lines into which all cause of death information must be entered with the initiating disease or injury listed on the lowest line used. The following figure is a screen shot of the EDRS medical certification fields.

**Figure 4. Screenshot of EDRS cause of death data collection fields**

**Chain of Events - Etiology**  
*Enter the chain of events - disease, injuries, or complications that directly caused the death. DO NOT enter terminal events such as cardiac arrest, respiratory arrest, or ventricular fibrillation without showing the etiology. DO NOT ABBREVIATE.*

<b>*A. Immediate Cause of Death:</b> <i>(Final disease or condition resulting in death.)</i> 120 -- Most recent condition -- <input type="text"/>	<b>*Interval between Onset &amp; Death</b> <input type="text"/>
<b>B. Due To or as a Consequence Of:</b> 120 -- Next oldest condition -- <input type="text"/>	<b>Interval between Onset &amp; Death</b> <input type="text"/>
<b>C. Due To or as a Consequence Of:</b> 120 -- Next oldest condition -- <input type="text"/>	<b>Interval between Onset &amp; Death</b> <input type="text"/>
<b>D. Due To or as a Consequence Of:</b> 120 -- Oldest (original, initiating) condition -- <input type="text"/>	<b>Interval between Onset &amp; Death</b> <input type="text"/>
<b>Other significant conditions contributing to death:</b> <i>(Not resulting in the underlying cause given above.)</i> 240 <input type="text"/>	

CHS forwards all raw cause of death information (i.e. the text information submitted through EDRS entered in the fields shown in Figure 2) in batches to NCHS for processing which includes the conversion of the words and

phrases used to report causes of death into ICD 10 codes. NCHS returns the coded to CHS, typically within 2 weeks.

While EDRS contains basic spell-check functions, it does not provide detailed guidance on how to report cause of death in accordance with standard rules of nosology. Furthermore, inconsistencies in the quality of information reported in the cause of death section also contribute to incomplete and/or inaccurate information on the diseases or injuries leading to death.

CHS corrects more obvious problems with cause of death reporting by contacting providers who have reported non-specific or vague causes of death. Approximately 8% of all death data require follow up annually. About a third of the providers respond to follow up letters with more specific and useful information regarding the cause of death.

### **Main analytic variables**

- ‘Underlying COD Code’ - Typically, analysis of mortality data to calculate population-level death rates requires the use of the variable “Underlying COD code”.

*Rationale* Each condition reported on the death certificate is assigned a code based on the International Classification of Diseases (ICD) 10th revision. Following ICD rules, one of these conditions is selected as the underlying cause-of-death which is defined as “(a) the disease or injury which initiated the train of morbid events leading directly to death, or (b) the circumstances of the accident or violence which produced the fatal injury.”

The standard practice in calculating mortality rates is to use the underlying cause of death as the numerator. It is a simplified representation of the initiating condition that led to death and therefore, is a practical and useful measure in identifying leading health burdens and developing preventive measures on a population level.

### **Related variables**

‘Record Axis Code 2’ through ‘Record Axis Code 20’ Analysis of ‘Underlying COD Code’ provides insight into the initiating cause of death, rather than the full sequence of events that led to death. Disease or injury events other than the underlying cause of death including co-morbidities are often recorded as multiple cause and contributing conditions. In the death statistical file, the

series of variables titled Record Axis Code 1 through Record Axis Code 20 list ICD 10 codes for all conditions reported on the death certificate in the order they were reported beginning with the Underlying Cause in Record Axis Code 1. In producing this series of codes, NCHS applies rules of nosology to edit contradicting causes of death, duplicates, and imprecisions in the same death record. The result is a series of codes that are the most meaningful and logical sequence of codes representing a given death.

To tabulate **multiple cause of death** use:

- Record Axis Code 2 through Record Axis Code 20. Record Axis Code 1 is the underlying cause of death.

*Other related variables* Variables that are not typically used to measure the burden of disease in terms of mortality are **ACME Line 1 through 20, ACME Sequence 1 through 20, ACME Cause Category 1 through 20, and ACME Nature of Injury 1 through 20**. These variables are used to report the line (b through d, additional reported added lines, or the other contributing conditions lines in the cause of death statement – see Figure 2), the position of each stated disease or injury on the line they were reported, the ICD 10 code associated with the condition, and a one digit flag indicating that the death was a result of an injury.

## Place of residence and occurrence

There are multiple variables in the death statistical data set that provide information on places (country, state, county, city, zip) of birth, residence, and death.

### Key analytic variables

#### *Residence State FIPS Code*

Use this variable to select Washington State residents (value “WA”). Mortality rates for Washington State are calculated using only state residents.

#### *Death State*

Use this variable if you wish to exclude deaths among Washington State residents that occurred out of state.

## Related variables

*City of residence and occurrence including the following variables: 'Residence County City WA Code', 'Death County City WA Code'*

All county-city codes are four-digit codes, with the first two digits being a county code and the second two being a city code. A city is given a separate code only if it has at least 2,500 people. Otherwise, it is given a 'balance of county' code (a two-digit county code and a city code of '00'), along with other small areas in the county. A city near the cutoff point may fluctuate above and below 2,500 population and thus may have a separate code in some years and not in others. For this reason, a count of zero deaths for one of these cities in a particular year may simply mean that it did not have a separate code in that year.

Population estimates provided by the Washington State Office of Financial Management (OFM) are used to establish which cities meet the population criteria for separate coding or become incorporated as separate cities. Because these estimates are published in the middle of the year, changes do not appear in the death data file until the following year. Thus, a city which first exceeds 2,500 population in 2020 would not have a separate code until 2021 are released.

The code for city of residence is based on whether or not the decedent lived within city limits. (These data are collected from the item on the death certificate: 'Inside city limits - yes/no'.) If he/she did (or if the city limits item is blank or unknown), the residence is given a distinct city code, as described above. If he/she did not, the city code is set to '00'. The city code in the file thus reflects reporting by the informant as to whether or not the decedent lived within city limits and may not agree with data determined by geocoding the address.

### *Zip Code of residence*

- *For death files 1968 through 2015*, the field, 'geozip', was added to the Death Statistical files. The values for 'geozip' were determined from the geocoding process described below. The geocoded zip code may differ from the reported zip code for several reasons: (1) a data entry or reporting error for the reported zip code; (2) the zip code boundary changed; (3) the geocoding process matched the address to the wrong

location. When working with data for 1988 through 2015, it is recommended that you use the ‘geozip’ field in preference to the reported zip code when the two zip codes do not agree. The reported zip code should continue to be used when the ‘geozip’ field is missing. However, zip code boundaries do change over time, so caution should be used when using zip codes for deaths occurring in earlier years, especially prior to 1994. The number of addresses with differences between reported zip code and geocoded zip code will increase when using older files because the geocoded zip field will have different boundaries.

- *For death files 2016 onwards*, the geocoded zip code field will only be in the Death Geocode file. That file will be made available a month or two after the release of the other death files. The Death Statistical file will only include the reported field, ‘Residence Zip Code’. It represents the zip code reported through EDRS. The reported zip code field will serve for most analyses, however, for those doing work that identifies specific zip codes, it is recommended that you use the geocoded zip code from the Death Geocode file.

#### *Variables derived by geocoding residential address*

We use a program developed in ArcGIS to match reported residential addresses to published standardized geographic information. Through this process we determine the latitude and longitude of the residential addresses of the decedents and assign the addresses to specific school districts, census tracts, block groups, and census blocks (as defined by both census 2000 and census 2010).

Geocoded variables, including the geocoded zip code, will be made available in the final Death Geocode file for 2021.

# CONTACT US

If you have any questions or suggestions for improving this technical document please contact us! Send your questions and comments to [CHS Data Requests]CHS.DataRequests@doh.wa.gov.

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